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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,908	KLINGLER ET AL.	
	Examiner	Art Unit	
	Patrick F. O'Reilly III	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/12/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: English translation for EP 1 359 035 A2 (machine-generated).

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on May 12, 2006 is acknowledged. The submission is in compliance with the provisions of 37 C.F.R. § 1.97 and 37 CFR § 1.98 and, therefore, the references therein have been considered.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and **legal phraseology** often used in patent claims, such as "means" and **"said,"** should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because it uses legal phraseology, such as "said" and "comprising". Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

On page 1 of the specification, in line 6, the reference to claim 1 should be deleted. In general, the specification should not contain specific references to claim numbers because these

numbers often change during the course of prosecution, such as, when claims are added or amended.

On page 2 of the specification, in line 3, the reference to claim 1 should be deleted. In general, the specification should not contain specific references to claim numbers because these numbers often change during the course of prosecution, such as, when claims are added or amended.

On page 4 of the specification, in lines 21 and 23, reference character "1" is used to denote the "nozzle array". However, reference character "1" is also used to denote the "nozzle" throughout this disclosure. The examiner believes that the reference character corresponding to the "nozzle array" should be "4" in lieu of "1".

Appropriate correction is required.

Claim Objections

6. Claim 7 is objected to because of the following informalities: in line 1 of this claim, the word "one", which immediately follows the word "in", should have been deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-3 and 6** are rejected under 35 U.S.C. 102(b) as being anticipated by European Patent No. EP 1 359 035 A2 ("EP '035"). The specification and the drawings in the EP '035 reference disclose all of the elements recited in **claims 1-3 and 6** of this application.

9. Specifically, in regard to claim 1, the EP '035 reference discloses all of the claimed elements, including: at least one nozzle (air outlet nozzle 1) disposed at one end of a flow duct (nozzle 1 is arranged at the end of an air duct) and a grille (air deflecting body 13) disposed at the nozzle outlet (downstream of the nozzle 1), wherein the grille (13) partially conceals the nozzle outlet (air deflecting body 13 covers the entire end of nozzle 1 except for the peripheral discharge opening 12). Refer to EP '035, Figure 2 and English abstract for EP '035; also refer to attached English translation for EP '035, page 2, paragraphs [0016] and [0024]. Therefore, because all of the elements in claim 1 of this application are disclosed by the EP '035 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

10. In regard to claim 2, the EP '035 reference further discloses that the grille (air deflecting body 13) conceals the nozzle (1) outlet in a central region (air deflecting body 13 covers the entire central region of nozzle 1, while leaving only a peripheral discharge opening 12 exposed). See EP '035, Figure 2 and English abstract for EP '035; also refer to attached English translation for EP '035, page 2, paragraphs [0016] and [0024]. Thus, EP '035 meets the language of this claim.

11. In regard to claim 3, the EP '035 reference further discloses that a circumferential gap (12) is provided around the grille (peripheral air discharge opening 12 is a continuous slot formed between the exterior periphery of housing 11 and interior periphery of air deflecting body 13). Refer to EP '035, Figure 2 and English abstract for EP '035; also refer to attached English

translation for EP '035, page 2, paragraphs [0016] and [0024]. Consequently, the EP '035 reference also meets the language set forth in claim 3.

12. In regard to claim 6, the EP '035 reference further discloses that the grille (13) is mesh-like in configuration (the air deflecting body 13 is mesh-like in configuration as shown in Fig. 3). See EP '035, Figure 3 and English abstract for EP '035; also refer to attached English translation for EP '035, page 3, paragraph [0029]. Therefore, the EP '035 reference also meets the language set forth in this claim.

13. **Claims 1 and 4-5** are rejected under 35 U.S.C. 102(b) as being anticipated by Stouffer et al. (US 5,356,336). The specification and the drawings in the Stouffer et al. reference disclose all of the elements recited in **claims 1 and 4-5** of this application.

14. Specifically, in regard to claim 1, the Stouffer et al. reference discloses all of the claimed elements, including: at least one nozzle (nozzle 10 with diverging top 14, bottom 15, and sides 16, 17) disposed at one end of a flow duct (nozzle 10 is arranged at the end of supply duct 12) and a grille (grill 20) disposed at the nozzle outlet (downstream of the diverging walls 14-17 forming nozzle 10), wherein the grille (20) partially conceals the nozzle outlet (grill 20 covers the entire end of nozzle 10 except for the open flow area, which is comprised of an array of polygonal cells bound by planar walls 21). Refer to Stouffer et al., Figures 1a-1b and 2; column 3, lines 19-33; and column 4, lines 33-39. Therefore, because all of the elements in claim 1 of this application are disclosed by the Stouffer et al. reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

15. In regard to claim 4, Stouffer et al. further discloses that the grille (grill 20) is rectangular in configuration (Fig. 1a). See Stouffer et al., Figure 1a and column 3, lines 22-23. Thus, Stouffer et al. meets the language of this claim.

16. In regard to claim 5, Stouffer et al. further discloses that the grille (grill 20) is substantially nontransparent in configuration (referring to the graph of grill opacity depicted in Fig. 6, a grill 20 with L/D ratio of 0.67 can achieve a relative opacity of approximately 77% for a viewing angle of approximately 45 degrees). Consequently, the Stouffer et al. reference also meets the language set forth in claim 5.

17. **Claims 1, 7, and 9** are rejected under 35 U.S.C. 102(b) as being anticipated by Greiner et al. (US 5,890,958). The specification and the drawings in the Greiner et al. reference disclose all of the elements recited in **claims 1, 7, and 9** of this application.

18. Specifically, in regard to claim 1, the Greiner et al. reference discloses all of the claimed elements, including: at least one nozzle (ventilation nozzle as depicted in Fig. 1) disposed at one end of a flow duct (the ventilation nozzle is connected to the front end of an air-conduction duct 10) and a grille (front screen 12) disposed at the nozzle outlet (screen 12 is located at the ventilation nozzle outlet), wherein the grille (12) partially conceals the nozzle outlet (screen 12 covers the entire end of the ventilation nozzle except for the open flow area, which is comprised of screen openings 17 separated from one another by screen webs 16). Refer to Greiner et al., Figure 1 and column 4, lines 3-18. Therefore, because all of the elements in claim 1 of this application are disclosed by the Greiner et al. reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

19. In regard to claim 7, Greiner et al. further discloses that the nozzle is a swirl nozzle (the linear air flow through the ventilation nozzle can be converted into a diffused swirl of air by adjusting the axial position of the air-guide block 13 to the position shown in Fig. 7). See Greiner et al., Figure 7; column 1, lines 36-39; column 2, lines 16-26; and column 6, lines 29-33. Thus, Greiner et al. meets the language of this claim.

20. In regard to claim 9, Greiner et al. further discloses that the grille (20) is semicircular in configuration at its right end (Fig. 1). Refer to Greiner et al., Figure 1. Consequently, the Greiner et al. reference also meets the language set forth in claim 9.

21. **Claims 1, 8, and 10** are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent No. 59215533 A ("JP '533"). The specification and the drawings in the JP '533 reference disclose all of the elements recited in **claims 1, 8, and 10** of this application.

22. Specifically, in regard to claim 1, the JP '533 reference discloses all of the claimed elements, including: at least one nozzle (centrally disposed nozzle bounded by partition walls 1a, 1b, 1d, and 1e and perimeter nozzles disposed between outer wall 1 and partition walls 1a, 1b, 1d, and 1e – Figs. 2 and 3) disposed at one end of a flow duct (5) and a grille (2) disposed at the nozzle outlet (grille 2 is disposed at the outlets of both the center and perimeter nozzles), wherein the grille (2) partially conceals the nozzle outlets (grille 2 completely extends over the center and perimeter nozzle outlets as shown in Fig. 1 so as to partially conceal the outlets, while still leaving open flow areas for the discharged air). Refer to JP '533, Figures 1-3 and 5; also refer to English abstract for JP '533. Therefore, because all of the elements in claim 1 of this application are disclosed by the JP '533 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

23. In regard to claim 8, the JP '533 reference further discloses that two nozzles (centrally disposed nozzle bounded by partition walls 1a, 1b, 1d, and 1e and top perimeter nozzle disposed between outer wall 1 and partition wall 1a – Figs. 2 and 3) are disposed side by side, which are jointly concealed by the grille (grille 2 extends over both the center and top perimeter nozzle outlet as shown in Fig. 1 so as to jointly, and partially, conceal the outlets). See JP '533, Figures 1-3 and 5; also refer to English abstract for JP '533. Thus, JP '533 meets the language of this claim.

24. In regard to claim 10, the JP '533 reference further discloses that the at least one nozzle array (with centrally disposed nozzle bounded by partition walls 1a, 1b, 1d, and 1e and perimeter nozzles disposed between outer wall 1 and partition walls 1a, 1b, 1d, and 1e – Figs. 2 and 3) is used in the ventilation and air conditioning system of a motor vehicle as an air discharge device mounted in the vehicle dashboard (Fig. 12). Refer to JP '533, Figures 2-3 and 12; also refer to English abstract for JP '533. Consequently, the JP '533 reference also meets the language set forth in claim 10.

Conclusion

25. See attached form PTO-892 for additional pertinent prior art, which was not directly relied upon in this action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick F. O'Reilly III whose telephone number is (571) 272-3424. The examiner can normally be reached on Monday through Friday, 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PFO3
pfo3

S. B. McAllister

STEVE MCALLISTER
SUPERVISORY PATENT EXAMINER

Result Page

[0001] The invention concerns an air discharge opening nozzle after the generic term of the requirement 1.

[0002] With ventilation devices for vehicles in practice air discharge opening nozzles with control equipments are used, which make a purposeful controlling possible of the withdrawing air jet. About one is anxious to steer apart from the direction of the air jet also the jet expanding. It was shown that opposite a focused air jet so an energetically more efficient keeping at a moderate temperature can be obtained. A passenger according to experience steers a focused and air jet kept at a moderate temperature after a certain time of itself away, in order to avoid unpleasant course features. This means that the heating and/or. Cooling performance to be increased does not have, in order to create a temperature pleasant for the passenger, there the air jet the passengers directly, but primarily different things in the vehicle heats or cools. If the passenger is illuminated directly against it with a vague air jet, then course features are avoided and the heating and/or. Cooling performance can be measured smaller.

[0003] From the EP 0,324,770 B1 an air discharge opening nozzle is well-known, which exhibits three to each other adjustable air guide baffles. The air guide baffles are arranged in the air outlet level of the air discharge opening nozzle, whereby an air guide baffle is firmly connected with the nozzle and two of the lattices are parallel to the firmly installed air guide baffle adjustable. By shifting the air guide baffles differently bent air conducting surfaces are formed, so that the withdrawal direction of the air jet is controllable. Unfavorable it is here that the air guide baffles exhibit a high flow resistance and that only the air outlet direction, not however expanding the air jet is controllable.

[0004] From the DE 41 39 099 C2 an air discharge opening is well-known, which exhibits a rotationally symmetric housing and a rigid impact plate. This is stationarily in the outlet section of the air discharge opening arranged. Inside the housing radially circulating spin shovels are arranged. By axial shifting of the spin shovels within the air discharge opening the Diffusivität of the withdrawing air jet can be steered. Here the high flow strömungsversperrung is from disadvantage by the spin shovels, which entails large losses.

[0005] The DE 196 12 764 C2 shows an air discharge opening also in the air outlet level stationarily arranged spin shovels. Inside the air discharge opening an axially adjustable air conduit tube is arranged for the change of the Diffusivität of the withdrawing air flow. High flow losses arise also here due to the large flow strömungsversperrung.

[0006] The GB 624.932 shows an air discharge opening nozzle with a being certain impact plate and a housing with radial air intake. Inside the housing air guidance elements are axially adjustably arranged. Depending upon axial position of the air guidance elements reroute this together with the impact plate air within the range between 180 and 90 degrees, flowing in radially into the nozzle casing, so that air withdraws adjustable radially or axially. By the radial air inlet direction caused here relatively large construction volumes of the air duct are unfavorable. Also the flow resistance of this air discharge opening nozzle is relatively high due to the air diversion.

[0007] The available invention is the basis the task to create an air discharge opening nozzle with adjustable Diffusivität of the air jet which is compactly trained, as well as a large attainable air jet expanding with small flow losses exhibits preferably is the air discharge opening nozzle simply and/or comfortable to serve to be and small noise exhibit.

▲ top

[0008] The task is solved according to invention by an air discharge opening nozzle after the characteristics of the requirement 1.

[0009] In the muzzle range of the air discharge opening nozzle a displacement body is arranged, which is axially adjustable, i.e. toward the central longitudinal axis of the air discharge opening nozzle is adjustable, and an adjustable flow strömungsversperrung exhibits. The displacement body can be arranged in the muzzle range of the air duct in their air outlet level or spend also from the muzzle range outward, so that it is arranged outside of the nozzle casing. By cooperating the position of the displacement body relative to the air outlet level on the one hand and the adjustable flow strömungsversperrung of the displacement body on the other hand the flow and pressure ratios within the muzzle range of the air discharge opening nozzle can and/or. downstream the muzzle range to be purposefully steered, so that the air flow in their jet expanding, withdrawing from the air discharge opening nozzle, and/or. Diffusivität and/or direction are controllable. The flow strömungsversperrung by the displacement body and thus the arising flow losses are small, there the displacement body during large displacement effect and/or. Flow strömungsversperrung outside of the nozzle casing is arranged.

[0010] It is intended in an execution of the invention to steer the flow characteristic of the displacement body by changing from its cross section and/or form to. The displacement body can exhibit for this tiltable lamellas, which are circularly arranged preferably V-shaped or.

[0011] The form or the cross section of the displacement body is changed by adjusting the lamellas.

[0012] In an execution of the invention the displacement body can exhibit a flexible diaphragm, with the lamellas or with staffs and/or. rod-shaped lamellas cooperates and a rounded off outer contour of the displacement body trains. The

entire outer contour or individual delimitation surfaces of the displacement body can be formed by the flexible diaphragm.

[0013] An execution of the invention plans a air-permeable displacement body, whose air permeability is adjustable. The air permeability can be so adjustable that the displacement body in not taken off position, D. h. within the range of the muzzle level, minimum flow resistance, D. h. maximum air permeability exhibits and/or in taken off position, D. h. outside of the nozzle casing, maximum flow resistance, D. h. minimum air permeability exhibits.

[0014] The displacement body can, in order to make possible different current profiles, to exhibit over its cross section a homogeneous or an inhomogenous air permeability.

[0015] Around the withdrawal direction of the air jet to steer it can be intended that the displacement body an inhomogenous air permeability, D. h. in locally defined surfaces different air permeability exhibits. Preferably the displacement body can exhibit several laminated perforated plates with differently divided hole sample or lattices with different division, so that depending upon position of the perforated plates or lattices a locally different air permeability can be stopped to each other. Thus a diversion of the air jet is possible into a certain direction. Also are possible by taxes of the inhomogenous air permeability of the displacement body a temporally changeable, preferably periodic controlling of the withdrawal direction of the air steel. By dumps of the displacement body opposite the nozzle exit cross section likewise a direction attitude of the withdrawing air jet is possible.

[0016] An execution of the invention plans that the displacement body is connected with a nozzle muzzle element, which is axially withdrawable from the nozzle casing. The side panels of the nozzle muzzle element exhibit recesses to the radial withdrawal of air, so that no or only a small flow handicap arises. It is intended that the nozzle muzzle element exhibits essentially identical cross section and/or diameter as the nozzle casing, whereby the cross section and/or diameter of the nozzle muzzle element can be slightly larger or smaller than that of the nozzle casing, so that the walls of the nozzle muzzle element rest positively within or outside of the nozzle casing against its side panels.

[0017] The nozzle muzzle element can be axially adjustably stored also over at the side panels of the nozzle casing arranged guide rails. Likewise a central, centrically guide rail arranged in the nozzle casing can be intended.

[0018] In constructionally simple execution the displacement body at firm position can be arranged outside of the nozzle casing or in the discharge opening delta.

[0019] A favourable execution plans that the nozzle casing exhibits an adjuster. The adjuster can exhibit mechanical and/or electrical and/or mechatronische actuators for adjusting the position and/or form and/or the cross section and/or the air permeability of the displacement body. In particular the adjuster is mechanically and/or automatically operated, preferably remote controlable, so that the withdrawal direction and/or Diffusivität of the air jet are controllable after a preselectable program sequence or timing over the adjuster manually and/or.

[0020] An application of the air outlet is in particular intended for Heizund/or climatic and/or ventilating systems for vehicles. In particular with Pkw's the desire exists to steer the air outlet of the heating and/or air conditioning system in such a way that apart from an arranged air outlet with high speed, a vague air outlet with low speed is adjustable, around z. B. to avoid unpleasant course features. The air discharge opening nozzle must comfortably, D. h. as noiselessly as possible its and if possible little building area is to stress.

[0021] Further characteristics and execution forms of the invention result from the requirements, the figures and the description of figure. Those managing specified characteristics and characteristic combinations specified and in the following are usable not only in the combination, but also in other combinations or in however position, indicated in each case, without leaving the framework of the invention.

[0022] In the figures further remarks of the invention are represented and described, show:

Figure 1: a schematic representation of an air discharge opening nozzle with focused air jet,
Figure 2: a schematic representation of the air discharge opening nozzle with vague air jet,
Figure 3: a schematic representation of a displacement body with adjustable air permeability,
Figure 4: a schematic representation of an air discharge opening nozzle with a form-changeable displacement body and a focused air jet,
Figure 5: a schematic representation of an air discharge opening nozzle with a form-changeable displacement body and a vague air jet.

[0023] In the figures an air discharge opening nozzle 1 is schematically represented 1 and 2. The air discharge opening nozzle 1 knows z. B. in the cockpit area or in a center console built as air discharge opening nozzle of a heating and/or an air conditioning system of a passenger car trained its.

[0024] The air discharge opening nozzle 1 exhibits a housing 11, which is arranged at the end of an air duct or an air distribution system. At the side of the housing 11 lying downstream the air discharge opening nozzle 1 exhibits a discharge opening delta 12 with a displacement body 13. The displacement body 13 is connected with a nozzle muzzle element 14. The central longitudinal axis 21 of the air discharge opening nozzle is represented broken and runs in approximately right-angled to the muzzle level, which runs along the line A A.

[0025] The nozzle muzzle element 14 exhibits side panels, which exhibit 11 equal formed cross section when slightly large dimensions as the housing. The side panels of the nozzle muzzle element 14 cover thus the housing 11 positively and are axially adjustably stored on it. So the nozzle muzzle element can do 14 together with the displacement body fastened to it 13 forward, z. B. into a vehicle interior inside, to be shifted. The side panels of the nozzle muzzle element 14 exhibit arranged section, recesses, which make as unhindered a flow as possible for air possible in predominantly radial direction in the front, to the displacement body 13.

[0026] A drive device 18 intervenes between the nozzle casing 11 and the nozzle muzzle element 14 for shifting the nozzle muzzle element and/or for steering the air permeability of the displacement body 13, so that the characteristic of the air discharge opening nozzle is automatically propelled changeable. The drive device 18 is connected with a control

device 17, which exhibits a control element 20 for manual steering of the air discharge opening nozzle 1. Apart from the manual operation the control device 17 can head for the air discharge opening nozzle 1 also program sequence-steered or time-steered, so that the air jet withdrawing from the air discharge opening nozzle 1 is automatically controllable on the basis preselectable programs or timings. The air discharge opening nozzle 1 is so controllable by the control device 17 that the air jet corresponds to the interests of a heating and/or a cooling phase of one attached heating and/or air conditioning system optimally. It is possible to connect or into such integrate the control device 17 with a climatic mechanism.

[0027] In the figure 1 the displacement body 13 represented with the nozzle muzzle element 14 in a pushed in position, so that the displacement body locks 13 concisely with the housing 11, is. The recesses in the side panels of the nozzle muzzle element 14 are covered of the nozzle casing 11. In this position the air jet, in the figures by arrows suggested, steps focused in axial direction from the air discharge opening nozzle 1 out. The flow resistance of the displacement body 13 is minimum adjusted for maximum amount of air throughput.

[0028] In the figure 2 the displacement body is 13 with the nozzle muzzle element 14 in to the interior a shifted, D. h. from the muzzle range 12 of the air discharge opening nozzle 1 out downstream shifted position represented. The displacement body 13 locks the nozzle muzzle element 14 to the interior. The recesses of the nozzle muzzle element 14 are now no more by the side panels of the nozzle casing 11 covered separate freely flow throughable, so that can withdraw the direction radial from the air discharge opening nozzle 1 withdrawing air flow in approach by the same. In this position the air jet withdraws vaguely. Via the air permeability of the displacement body 13 the beam effect can be steered such that differently high amounts of air flow by the displacement body on the one hand and the recesses on the other hand. One receives two partial air flows, whose relationship determines the Diffusivität of the air flow for the vague air flow. This relationship can be adjusted by the variables of the position and/or flow strömungsversperrung of the displacement body in connection with the cross section and the arrangement of the recesses. If the recesses in the side panels of the nozzle muzzle element 14 possess a comparable cross-section area like the Düsenquerschnitt, in the case of maximum beam effect additional losses hardly result, in the comparison with a freely flow throughable air duct well-known design. In this beam effect in combination with small pressure losses the air discharge opening nozzle 1 exhibits in principle flow characteristics of an air discharge opening nozzle with substantially larger cross section, so that in fact an enlargement of the Düsenquerschnitts results in the case of continuous nozzle dimensions.

[0029] The figure 3 shows an example of the displacement body 13 with three lattices 19a, 19b and 19c arranged in direction of flow lying one behind the other. The individual lattices 19a, 19b and 19c are parallel to each other arranged and against each other adjustably trained. In figure 3a is the Gitteranordnung with the smallest flow strömungsversperrung, D. h. the largest air permeability of the displacement body 13 represented, like it z. B. with focused air jet usually one uses. All three lattices 19a, 19b and 19c are one behind the other aligning arranged, so that a maximum freely flow throughable surface between the lattice props results. In figure 3c is the Gitteranordnung with the highest flow strömungsversperrung, D. h. with the smallest air permeability, the displacement body represented, like it z. B. with vague air jet one uses. All three lattices are transferred to each other arranged, so that between the lattice props only a small freely flow throughable surface results. An intermediate position with an air permeability lying between the maximum and minimum value is shown in figure 3b.

[0030] In the figures a remark example of the air discharge opening nozzle 1 with a form-variable displacement body 13 is shown 4 and 5. The air discharge opening nozzle 1 is developed like managing described, whereby however the nozzle muzzle element 14 in the nozzle casing 11 is arranged on the inside here. The displacement body 13 is connected connecting posts over not represented with the nozzle muzzle element 14 and can be shifted by moving the nozzle muzzle element 14 in axial direction.

[0031] The displacement body 13 exhibits two lamellas 15, the V-shaped arranged and tiltable connected is. The pointed end of the V-shaped arranged lamellas points to the air discharge opening nozzle 1 to the current into the inside. The lamellas 15 are coated of a flexible diaphragm 16, which forms the outer contour of the displacement body 13. The displacement effect of the displacement body 13 can be changed by swivelling the lamellas, as its cross section and thus its flow resistance are changed.

[0032] In figure 4 is a position of the lamellas 15 with small flow resistance and/or. Cross section of the displacement body 13 represented. The air jet withdraws here essentially axially from the housing 11 of the air duct 1 and by the displacement body 13 only few is affected. For minimum Strahlaufweistung the lamellas 15 can be aligned parallel to each other.

[0033] In figure 5 is a position of the lamellas 15 with larger flow resistance and/or. Cross section of the displacement body 13 represented. The air jet is radially diverted here by the displacement body 13, so that it is expand.

[0034] As a result of the arrangement of the displacement body 13 outside of the nozzle casing 11 an only small flow strömungsversperrung and thus only small additional flow losses arise opposite a freely flow throughable air duct without flow strömungsversperrung. Over appropriate dimensioning and arrangement of the displacement body 13 different beam effects for different applications of the air discharge opening nozzle 1 can be realized.

Result Page

1. Air discharge opening nozzle for a ventilation system, in particular in a vehicle,
with a nozzle casing with nozzle muzzle element and a displacement body, arranged exhibiting a discharge opening delta, within the muzzle range in the air flow, which are connected with the nozzle muzzle element,
thus characterized,
that the position of the displacement body (13) is in axial direction relative to the discharge opening delta (12) adjustable, by being adjustable by a position in the discharge opening delta (12) into a position outside of the nozzle casing (11) and
that the displacement body (13) exhibits an adjustable flow strömungsversperrung.

2. Air discharge opening nozzle according to requirement 1,
thus characterized,
that the displacement body (13) in the position in the discharge opening delta (12) exhibits minimum flow strömungsversperrung.

3. Air discharge opening nozzle according to requirement 1 or 2,
thus characterized,
that the displacement body (13) in a position exhibits 11) high flow strömungsversperrung outside of the nozzle casing (.

4. Air discharge opening nozzle after one of the requirements 1 to 3,
thus characterized,
that the displacement body (13) exhibits an adjustable cross section and/or an adjustable variable form.

5. Air discharge opening nozzle after one of the requirements 1 to 4,
thus characterized,
that the displacement body (13) exhibits adjustable lamellas (15) or staffs, whereby preferably the lamellas (15) are arranged V-shaped.

6. Air discharge opening nozzle after one of the requirements 1 to 5,
thus characterized,
that the displacement body (13) exhibits a flexible diaphragm (16).

7. Air discharge opening nozzle according to requirement 5 or 6,
thus characterized,
that the diaphragm (16) and/or the lamellas (15) and/or staffs as adjusting differently formed delimitation surfaces and/or cross sections of the displacement body (13) are trained and/or. are.

8. Air discharge opening nozzle after one of the requirements 1 to 3,
▲ top
thus characterized,
that the displacement body (13) exhibits an adjustable air permeability.

9. Air discharge opening nozzle according to requirement 8,
thus characterized,
that the displacement body (13) exhibits an air permeability homogeneous over its cross section.

10. Air discharge opening nozzle according to requirement 8,
thus characterized,
that the displacement body (13) exhibits an air permeability differently adjustable in locally defined surfaces.

11. Air discharge opening nozzle after one of the requirements 8 to 10,
thus characterized,
that the displacement body (13) exhibits several, preferably three against each other adjustable lattices (19a, 19b, 19c) and/or perforated plates.

12. Air discharge opening nozzle after one of the requirements 8 to 11,
thus characterized,
that the nozzle muzzle element (14) is extendable trained in axial direction from the nozzle casing (11), as the nozzle muzzle element (14) exhibits side panels, which are so trained that the nozzle muzzle element (14) exhibits to a large extent same cross section with slightly larger or smaller dimensions as the nozzle casing (11) and its side panels against walls of the nozzle casing (11) is positively resting led.

13. Air discharge opening nozzle after one of the requirements 8 to 11,
thus characterized,

that the nozzle muzzle element (14) is extendable trained in axial direction from the nozzle casing (11), as the nozzle muzzle element (14) over rails is adjustably stored in the nozzle casing (11), whereby the rails between nozzle casing wall and nozzle muzzle element (14) are arranged or in central place in the nozzle casing (11) along the central longitudinal axis (21) running.

14. Air discharge opening nozzle according to requirement 12,
thus characterized,
that the side panels of the nozzle muzzle element (14) within the range of the displacement body (13) recesses it exhibits, which are trained by air as the radial withdrawal.

15. Air discharge opening nozzle according to requirement 14,
thus characterized,
that the recesses of the nozzle muzzle element (14) are taken off with pushed in nozzle muzzle element (14) by the nozzle casing (11) and are freely flow throughable with taken off nozzle muzzle element (14).

16. Air discharge opening nozzle after one of the requirements 8 to 15,
thus characterized,
that the displacement body (13) at the outside end of the nozzle muzzle element (14) is arranged and 14) at least partly takes off the cross section of the nozzle muzzle element (, preferably perpendicularly to its side panels is arranged.

17. Air discharge opening nozzle after one of the requirements 1 to 16,
thus characterized,
that the nozzle casing (11) exhibits an adjuster (17) for adjusting the flow strömungsversperrung, preferably the air permeability and/or the position and/or the form, the displacement body (13).

18. Air discharge opening nozzle according to requirement 17,
thus characterized,
that the adjuster (17) exhibits a manual control element (20) or is connected with such, which is trained as manual adjusting of the flow strömungsversperrung, preferably the air permeability and/or the position and/or the form of the displacement body (13).

19. Air discharge opening nozzle according to requirement 17 or 18,
thus characterized,
that the adjuster (17) is trained as automatic adjusting of the flow strömungsversperrung, preferably the air permeability and/or the position and/or the form of the displacement body (13), preferably after a timing and/or a program sequence given in advance.

20. Air discharge opening nozzle after one of the requirements 17 to 19,
thus characterized,
that in such a way the adjuster (17) steers the flow strömungsversperrung, preferably the air permeability and/or the position and/or the form of the displacement body (13) that with each attitude is the pressure loss equally large caused by the displacement body (13), so that the leaking out amount of air is constant.